BIOTIC COMMUNITIES

Fish Community

Sampling Protocol

Fish sampling community site selection of representative reaches within the Gasconade River watershed was based on stream order, flow, stream complexity within each 11-digit hydrologic unit, and access to the site (Figure 22). East Central Fisheries personnel evaluated the fish community on all streams 4th-order or greater during years 1997-99. Site selection was augmented by (1) constructing gradient plots of potential areas to provide variation in gradient among the sites, (2) consulting a topographic map or aerial photos for surrounding land use and access to site, (3) viewing video tapes of the watershed areas, and (4) using ArcView 3.1 so that previously sampled sites and all road crossings were identified. Final selection was based on relative difference of the areas and access to the site. For ease of stream assessment and avoidance of trespass, a ford or a bridge was often near or part of the site. Fish sampling gear was backpack electroshocker or boat-boom electroshocking equipment.

From 1900-96, historic fish community sampling used fixed sampling sites with little change among most historic sample dates. Sampling methods varied and involved the use of kick seine, drag seine, and electrofishing.

Historic and Recent Fish Collections

The Gasconade River is one of the few remaining unimpounded rivers from the source to the mouth, which allows the free movement of fish such as the American eel and the Alabama shad. A diverse assemblage of ichthyofauna was collected by MDC's Regional Fisheries staff and Fisheries Research Section within the confines of the Gasconade River watershed. A grand total of 103 species of fish was collected from 1900-96 and more recently from 1997-99 (Table 27). This total includes the southern cave fish found within Roubidoux Spring of Pulaski County. These species were distributed among 49 genera and 21 families of fish ranging from the prehistoric Petromyzontidae (lampreys) to the more modern Percidae (perches) and Sciaenidae (drums). Three of the most common Centrarchidae hybrids were retained in the list but not included in the grand total.

Dominance within the 103 species was concentrated within five families. The five dominant families and the number of genera were: Cyprinidae (16 genera), Catostomidae (6 genera), Ictaluridae (4 genera), Centrarchidae (4 genera), and Percidae (3 genera). In general, ecological dominance reflects the aquatic food web, where the more dominant Cyprinidae feeding upon the invertebrates and become forage for genera within the Centrarchidae or Percidae family.

The most widely distributed species of Cyprinidae were the bleeding shiner, hornyhead chub, and largescale and central stonerollers. Among the Centrarchidae, the longear sunfish, rock bass, bluegill, sunfish, smallmouth bass, largemouth bass, and the spotted bass were some of the most widely distributed species. Spotted bass are a relatively new species in the Gasconade River fish assemblage that appear to be expanding their range for reasons that are not clear. It is possible that before, during, or after the introduction of spotted bass, some streams have become warmer through loss of riparian shading and have experienced degraded water quality (increased nutrient loads), or perhaps streams have experienced physical habitat modifications, such as increased gravel loads or fine sediment that has made it easier for

spotted bass to occupy habitats formally containing only largemouth and smallmouth bass.

Aquatic Invertebrates

Living and dead mussel species collected from 1980-94 and again from July 21, 1998 and September 16, 1999 in Roubidoux Creek, Osage Fork, and the main stem Gasconade River total 42 different naiade species (also see Benthic Research Collection below) (Table 28). These species were distributed among 27 different genera. The dominant genera were *Lampsilis* (6 species), *Quadrul*a (3 species), and *Fusconai*a (2 species).

Among the dominant genera, the pocketbook mussel (*Lampsilis cardium*) was the most widely distributed with 30 occurrences throughout the watershed. The pink mucket (*Lampsilis abrupta*), a federally endangered species, was collected in the main stem Gasconade River during 1983 and 1994. The pimpleback (*Quadrula pustulosa*) and the mapleleaf (*Quadrula quadrula*) were collected in the main stem Gasconade River from 1981 to 1994. The pimpleback was also collected in the Osage Fork of the Gasconade River in 1983. The genus *Fusconai*a was collected in the Roubidoux Creek, Gasconade River, and the Osage Fork of the Gasconade River from 1980-94. The ebonyshell (*Fusconaia ebena*) has no historic record in Gasconade River watershed and was first collected in 1994 in the main stem Gasconade River.

In the 1998-99 field survey 35 living unionid species were observed in the Upper Gasconade River watershed and its tributaries, Osage Fork, Woods Fork, Whetstone Creek, and Roubidoux Creek. Seven species of conservation concern (*Leptodea leptodon, Elliptio crassidens, Cumberlandia monodonta, Alasmidonta marginata, Ligumia recta, Plethobasus cyphus,* and *Ptychobranchus occidentalis)* were found.

Crayfish

Crayfish remain an important component of the riverine ecosystem, as converters of leaf litter and as prey for a variety of fish species. Five species of crayfish, including the Salem cave crayfish (*Cambarus hubrichti*), (also see Benthic Research Collection below) have been collected in the Gasconade River watershed and three genera comprise the five species (Table 29). The dominant genus, *Orconectes*, was most commonly collected and comprised over 99% of the crayfish composition. Both species of *Orconectes* were collected throughout the watershed in Whetstone Creek, Woods Fork, Roubidoux Creek, Little Piney Creek, Beaver Creek, and the main stem Gasconade River. The devil crayfish (*Cambarus diogenes*) and the digger crayfish (*Fallicambarus fodiens*) were collected, respectively, in Roubidoux Creek and the Lower Gasconade River in 1980. The rare Salem cave crayfish is located in some caves of the watershed.

Benthic collections in the Gasconade River watershed were performed by MDC Fisheries Research from 1962-92. A total of five orders and 64 families were collected in various locations of the watershed (Table 30).

This database collection contains some crayfish species and some mussels species not found in the other databases. Two additional *Orconectes* genera within the Cambaridae family were identified in this database, making a total of seven species of crayfish in the Gasconade River watershed. Also, four unique species of mussels were identified within four different genera, *Ferrissia, Planorbula, Elimia,* and *Pleurocera,* making a total of 46 mussels species (Table 30).

Rare, Threatened, and Endangered Species

Fish species decline within the Gasconade River watershed is due to several factors, but the largest contributor may be habitat alteration. A list of those fish species of concern (Table 31) can be found within the Natural Heritage Database (the database is updated periodically with recent locations and new species).

Alabama shad (*Alosa alabamae*). At one time the Alabama shad had a fairly wide distribution and was common enough to support a limited fishery (Pflieger 1997). The Alabama shad is anadromous in the Mississippi River system, entering freshwater to spawn. The occurrence of the adults are from mid-April to early July. The young migrate after the first few months of life.

Highfin carpsucker (*Carpiodes velifer*). The highfin carpsucker is considered rare in Missouri and over the years has become less common (Pflieger 1997). The highfin carpsucker prefers clear water, firm bottoms, and is less tolerant of turbidity and siltation than other carpsuckers.

Crystal darter (*Crystallaria asprella*). The crystal darter occurred in the Gasconade, Meramec, Black, St. Francis and Little River drainage systems. According to Pflieger (1997), the crystal darter has never been common in any collections, most collections with only three to four specimens.

Bluestripe darter (*Percina cymatotaenia*). The bluestripe darter is endemic to the Osage and Gasconade river systems of central Missouri. The bluestripe is a former USFWS category-2 candidate species. The practice of categorizing species with this federal status was eliminated in 1996. The bluestripe remains an imperiled state species of conservation concern because of its rarity and rather few occurrences. However, its vulnerability to extinction is less than the Niangua darter because it exists in two different drainages (Pflieger 1984) The closest relative of the bluestripe darter is a rather nebulous species in Kentucky.

Least darter (*Etheostoma microperca*). The least darter state-wide population has been reported to have changed very little in the last 35 years (Pflieger 1997). The least darter is found in clear, quiet, heavily vegetated waters, such as pools of small creeks with permanent flow and spring pools.

Mooneye (*Hiodon tergisus*). Never common in Missouri collections, this species is less common than the goldeye. It inhabits the larger, deeper pools of streams and prefers slightly clearer water than the goldeye, which can tolerate more turbid conditions. Where goldeye may be found within current, the mooneye prefers the quieter pools (Pflieger 1997).

Of special concern to biologists are amphibians that have recently experienced die-offs and mutations in some areas within the United States. Three genera of amphibians have declined and are state-listed species of conservation concern (Table 31). These species include the ringed salamander, Eastern hellbender, and the four-toed salamander.

A total of 13 invertebrates (mussels, crustaceans, and insects) are state listed as species of conservation concern within the Gasconade River watershed. Five state-listed endangered mussels species, the elephant ear (*Elliptio crassidens*), ebonyshell (*Fusconaia ebena*), the scaleshell (*Leptodea leptodon*), the pink mucket (*Lampsilis abrupta*), and html *(Plethabasus cyphyus)* are found within the Gasconade River watershed. The pink mucket is the only federally endangered mussel, and for that matter, the only federally endangered aquatic species within the watershed. The rare Salem cave crayfish (*Cambarus hubrichti*) is located in some caves of the watershed. Finally, a rare perlid stonefly (*Acroneuria*

ozarkensis) is found in the watershed.

Funk (1968) published only qualitative information about the fish harvest of the Gasconade River watershed, however, quantitative estimates of fish harvest were needed to make stream management plans. From 1976-79, estimates of recreational use of the Gasconade River were obtained during the 3-year survey period that involved 27,600 personal interviews conducted by trained clerks (Fleener 1982). Estimates of angler effort and catch rate were presented for the upper, middle, lower segments of the Gasconade River, and the Osage Fork of the Gasconade River (Table 32). Anglers spent a total of 46,710 hours harvesting fish by pole and line, set line, and gigging within the upper segment of the Gasconade River, State Route M near Hartville to State Highway 133 (89 miles) from March 12, 1978 to March 10, 1979. The overall catch rate was 0.78 fish per hour, while the catch rate by pole-and-line anglers was 0.73. The catch rate by pole-and-line anglers was considerably higher on the upper segment than on the middle (0.35) and lower segment (0.43). Within the middle segment of the Gasconade River, State Highway 133 to Route E (86 miles), March 14, 1976 to March 12, 1977, anglers spent a total of 81,500 hours harvesting fish by pole and line, set line, and gigging. The overall catch rate for this segment was 0.40, which was slightly lower than the catch rate of 0.5 fish per hour for many Ozark streams. Anglers spent a total of 51,060 hours harvesting fish by all methods combined within the lower segment of Gasconade River, Route E in Maries County to the mouth (89 miles), from March 13, 1977 to March 11, 1978. An estimated 88,270 fish were caught on the lower segment in 353,070 hours of fishing (Table 32). Anglers, harvesting by pole and line and by gigging from Osage Fork of the Gasconade River (56 miles from Wright-Laclede County line to confluence) from March 12, 1978 to March 10, 1979, spent an estimated 30,200 hours and caught 15,390 fish at a rate of 0.54 fish per hour. The combined catch rate of the Osage Fork was higher than any other segment except the upper segment of the Gasconade River.

No commercial harvest of fish or mussels is allowed in the Gasconade River watershed (Wildlife Code of Missouri 2000).

Sport Fish

Anglers are provided a multitude of sport fishing opportunities as the Gasconade River changes character from an Ozark headwater stream system to a large river system. The Gasconade River is the largest unimpounded stream in Missouri. Black bass, buffalo, crappie, channel and flathead catfish, drum, rock bass, redhorse, suckers, sauger, and walleye can all be found in various reaches of the Gasconade River. In addition, trout can be caught in a number of spring branches and spring fed streams within the Gasconade River watershed.

The Gasconade River was divided into three zones for the purpose of fish sampling. The upper zone included the headwater and continued to about the Jerome Access. The middle zone continued downstream to the Paydown Access. The lower zone extended downstream from the Paydown Access to the mouth of the river. Some species were more abundant in the upper reaches, while other species increased as we fished downstream.

Generally, sport fish samples collected in the 1990s have focused on smallmouth and rock bass. During the early part of the decade, samples were collected from a number of public fishing access points from Jerome to Fredericksburg Ferry. More recently, specific segments of the river were the focus of the seasonal sample. In 1998, the segment between Indian Ford Resort and Paydown Access was intensively sampled. In 1999, the segment between Jerome Access and Indian Ford Resort was sampled.

The black basses were not evenly distributed throughout the main stem of the Gasconade River. Smallmouth bass became more abundant farther upstream, though some very large smallmouth were found in the lower river. Spotted bass were most abundant on the lower end of river and were virtually absent above Jerome. Largemouth bass were found throughout the sampled area, though not necessarily in great numbers. However, largemouth bass were usually the largest bass captured at a given sample site.

Rock bass (goggle-eye) are found throughout the Gasconade River watershed. This secretive fish can be found in association with cover. They are at home in the large holes with boulders, rootwads, and aquatic vegetation. Most rock bass are ≤ 7 inches long, though fish catches contain an occasional 8-inch or larger rock bass. Rock bass numbers tend to increase upstream on the Gasconade River, while rock bass size tends to increase downstream.

Sauger have been collected as far upstream as the Jerome Access. However, they were most abundant in the lower Gasconade River near the Missouri River. Catch has declined in recent years. Walleye are found throughout the river and have been sampled as far downstream as the First Creek confluence. Samples from walleye have been submitted for genetic comparison with other systems in the state. The Gasconade River population does not appear to be unique, though this is based on a relatively small sample. Efforts to sample them during the spring spawning run have been unsuccessful to date. Apparently, there are a number of good walleye spawning areas throughout the river and they do not remain in those areas for an extended period of time. Spawning riffles are widely spaced and are not necessarily used annually. If substrate and flow produce favorable conditions, spawning will take place. However, to date no specific spawning sites have been identified (Michael Smith, MDC Fisheries Management Biologist, personal communication). Interest in the winter fishery for sauger and walleye has steadily increased and as a result has caused a decline in that fishery. Most Gasconade River walleye and sauger are caught on crankbaits while fishing for other species. The 15-inch minimum length limit should show some improvement, if excessive harvest has been responsible for the recent decline in the quality of this fishery.

The Gasconade River supports an excellent catfish fishery. Popular catfish fishing methods are still fishing, limb lining, and trot lining. Channel catfish were the most abundant catfish in the river. Flathead catfish were also present. Catfish have been collected while targeting other sport fish. Representing the river in general, Figure 23 is a summary of a recent collections. Smaller (younger) fish were under-represented due to a sampling bias that selects for larger fish. However, channel catfish numbers and size distribution were excellent.

The Gasconade River is home to numerous redhorse and other suckers. There have not been any systematic evaluations of the suckers in the past decade. Some future attention is probably warranted as gigging continues to be a popular harvest method. Water conditions impact the amount of gigging pressure as high turbidity during floods or low water reducing the mobility of boats can determine the availability of redhorse and suckers.

Special Management Areas

A Special Research Area (Gasconade River from Highway Y in Pulaski County to Highway D in Phelps County) was established with a 18-inch smallmouth bass length limit in 1994. The numbers of smallmouth bass ≥ 18 inches have not increased dramatically, though the numbers of 12 to 15-inch

smallmouth bass have increased. Growth slows dramatically as smallmouth age and an ≥ 18-inch smallmouth is seven to nine years old. A creel study has been conducted in conjunction with this study. Rock bass numbers have fluctuated during the study. The average harvested size of rock bass is about seven inches. While fishing trips and hours have not recovered from the initial drop that occurred when the more restrictive regulation was enacted, overall both have been variable. The MDC Fisheries Research Unit will continue to evaluate the impacts of this regulation through at least 2001.

Osage Fork

The Osage Fork is also included in the upper Gasconade zone. Both smallmouth bass and rock bass will receive special management. A Smallmouth Bass Management Area (SMBMA) was created in 2000. This area has a 15-inch length limit and a daily limit of six black bass, which may include only one smallmouth bass. A Special Management Area was established for rock bass beginning March 2001. This area has a 8-inch length limit. A management evaluation was conducted to assess the rock bass and black bass populations within the Osage Fork of the Gasconade River. The Osage Fork was sampled using boom-mounted electrofishing equipment from 1996-1999. Sampling concentrated near three MDC accesses, Drynob, Davis Ford, and Hull Ford, and near county road crossings, Orla and Highway B. No spotted bass were present in any of the samples. Relative stock density (RSD) represents the proportion of fish that are quality size (≥ 11 inches) out those that are stock size or larger. Stock size for smallmouth bass is at least seven inches. The number of smallmouth bass greater than seven inches total length was greatest in 1998. The smallmouth bass fishery showed improvement in quality size fish. Largemouth bass boasted a bigger percent of larger-sized fish than smallmouth bass. Rock bass stock size was considered to be four inches. The number of rock bass greater than four inches was highest in 1997 and lowest in 1996. Overall, management evaluations have revealed that numbers of black basses and rock bass were satisfactory, but could be improved. The SMBMA and SMA are expected to restore quality fishing in an excellent reach of Ozark stream.

Little Piney Creek

Little Piney Creek provides excellent fishing opportunity as it has considerable stream frontage on land in the Mark Twain National Forest. Much of it is a cold water stream due in part to the discharge of Piney, Yancy Mill, and Lane springs. On March 1, 2001, a Wild Trout Management Area (WTMA) was formed and a Trout Management Area (TMA) was relocated. Little Piney Creek supported a TMA at Lane Spring, which has received put-and-take rainbow trout since 1969. Wild trout are present from the springs above U.S. Hwy. 63 to a few miles below the Vida Slab Bridge. MDC conducted a number of studies, beginning in 1994, to evaluate the fisheries potential of Little Piney Creek. Temperatures were recorded, fish populations were sampled, trout were tagged, and anglers were surveyed at Lane Spring to assist in the formulation of a trout management plan for Little Piney Creek. As a result of these studies, the primary objective was the protection and enhancement of the self-sustaining rainbow trout population of Little Piney Creek.

The Little Piney Creek WTMA begins at the Phelps County line about 1.75 miles upstream of the Piney Spring confluence and extends to the Milldam Hollow Access at the end of Forest Service Road #1735. The upgrade of the forest road was a key component of the regulation. Upgrade costs were shared between MDC and the U.S. Forest Service, and the access provides the necessary geographic demarcation to make the regulation enforceable. Anglers will be able to identify this location to know where they are and also have an opportunity to access or leave the stream where regulations change. The

adoption of this regulation created a 9.9 mile long WTMA, though Little Piney goes dry most years along the first 1.3 miles below the county line.

The Lane Spring TMA was discontinued due to the creation of the WTMA, which includes the Lane Spring frontage. The Lane Spring stockings have maintained a locally popular put-and-take fishery. Many of the surveyed anglers expressed satisfaction with the current management regime. Other anglers expressed support for regulations similar to the one proposed. Most anglers were in favor of catch-and-release fishing. The decision to cease rainbow trout stockings at Lane Spring is a biological one with sociological implications. The new TMA (3.7 miles) is managed similarly, but not identically to, the one formerly at Lane Spring. It is bounded by the Milldam Hollow Access and Phelps County Road 7360. This Forest Service property can be accessed from Phelps County Road 7400, off State Hwy. T near Newburg. The TMA technically starts where the WTMA ends. However, only the lower mile of the Forest Service's Little Piney Allotment is stocked. The stocked area is roughly 0.5 miles above and below the intersection of Phelps County Road 7400 and Forest Service Road #1735, well below the end of the WTMA. The initial stocking regime provided 300 rainbow trout that were stocked over seven trips for a total annual stocking of 2100 10-12" trout. The buffer between areas is intentional, though some fish will move both up and downstream. MDC is evaluating fish movement from the stockings. A foot path and additional parking will eventually be developed. Stockings occurs during the spring and fall, but is suspended during the hottest weather because this portion of Little Piney Creek warms above the preferred temperature of rainbow trout during July and August (Table 33).

Concerns about mixing hatchery-strain rainbow trout with the self-sustaining rainbows near the Little Piney Creek allotment was addressed with a genetics study. MDC collected tissue samples from trout produced in the stream. Genetic analysis showed that more than half of those samples had characters also contained in samples from our hatchery stock.

Little Piney supports an excellent smallmouth bass and rock bass fishery downstream of the trout management area where the water has warmed. Bluff holes with boulders and rootwads are common and provide a home for both species.

Mill Creek

A Wild Trout Management Area exists on the lower 7.7 miles of Mill Creek, a tributary to Little Piney Creek in Phelps County. Base flow is supported by Wilkins, Hudgen's, Elm springs, and during wet years, Yelton Spring. The area has been managed for wild rainbow trout since 1972 when a fishing refuge was established. In 1982, a WTMA was established with an 18-inch minimum length limit. This regulation effectively creates a catch-and-release fishery as the vast majority of the trout present are ≤ 9 inches long (Figure 24). Mill Creek has benefitted from a number of conservancy efforts in recent years. Organized anglers have contributed to the purchase of frontage along Mill Creek. They have also been active in annual work projects geared toward improving instream habitat. Volunteers have assisted in the installation of cedar tree revetments to stabilize the banks, installation of rootwads to narrow the channel and create greater depth, corridor plantings, monitoring of the stream channel morphometry, and fish population sampling. These projects have taken place in cooperation with the Mark Twain National Forest who owns the frontage. In addition, a major private lands initiative is underway where a number of landowners have addressed streambank erosion by installing rip rap at the bank toe and improved instream habitat with rootwad and boulder placements.

Roubidoux Creek

An urban trout fishery (0.9 miles) has been established within the city limits of Waynesville. Rainbow trout have been stocked by the Department of Conservation since at least 1979. Roubidoux Creek receives discharge from Roubidoux Spring, which creates a coldwater fishery to where Roubidoux Creek enters the Gasconade River. The area immediately below the spring and along city park frontage receives periodic stockings of catchable-size rainbow trout. In a typical year about 6,500 catchable-size rainbow trout are stocked. The stocking dates are no longer announced. Residence time is still relatively short after stocking, but some trout survive until the next stocking.

The final 2.2 miles is a Trout Special Management Area (TSMA) where brown trout have been stocked annually since 1991. Currently, 800 eight-inch to ten-inch brown trout are stocked each spring. MODOT right-of-way and Roubidoux Conservation Area provide access to some of the TSMA. The brown trout fishing has not lived up to expectations as the lower end warms considerably and the brown trout have the tendency to move upstream into a less regulated (protected) area during floods. However, classic habitat continues to hold a few nice fish and catch rates fairly high for awhile after each spring stocking.

Gasconade River tributaries

Less is known about the sport fisheries of the Gasconade River tributaries. One would expect excellent wade fishing in a number of them, especially where quality habitat exists.

Fishing Regulations

The Wildlife Code of Missouri contains specific information about the statewide fishing regulations (creel limits, size limits, seasons, and gear) that apply to the Gasconade River. In addition, the following special regulations currently apply. Please check the Missouri Wildlife Code for additional information.

Black Bass (largemouth, smallmouth, and spotted) open season is from the fourth Saturday in May until the last day of February. The daily limit is six in the aggregate with a 12-inch minimum length limit. Possession limit is twice the daily limits. Within the Gasconade River watershed, smallmouth bass are protected in the following two restrictive zones: 1) In the Gasconade River from Highway Y Bridge in Pulaski County to Highway D Bridge in Phelps County, smallmouth bass are protected by an 18-inch minimum length limit; only one of the six black bass may be a smallmouth; 2) In the Osage Fork of the Gasconade River from Skyline Drive bridge near Orla to its confluence with the Gasconade River, smallmouth bass are protected by an 15-inch minimum length limit; only one of the six black bass may be a smallmouth.

The Osage Fork of the Gasconade River from Skyline Drive bridge near Orla to its confluence with the Gasconade River adds the following restriction: Rock bass minimum length limit is eight inches, and the daily limit is eight.

Three Wild Trout Management Areas (WTMAs), two Trout Management Areas (TMAs) and one Special Management Area (SMA) are found within the boundaries of the Gaconade River watershed. A trout permit, in addition to a Missouri fishing permit, is required to possess trout.

Wild Trout Management Areas (WTMAs) are found within Little Piney Creek, Mill Creek, and Spring Creek and are all located in Phelps County. The Little Piney WTMA begins at the Phelps/Dent County Line and extends to Milldam Hollow Access. It includes the Piney and Lane Spring branches. Mill Creek WTMA begins at Yelton Spring and extends to the Little Piney. It includes Wilkins Spring and spring

branch. The Spring Creek WTMA begins at Relfe Spring and extends to the Big Piney. The daily limit for these WTMAs is one trout with a 18-inch minimum length limit. Only flies and artificial lures may be used, and soft plastic baits and natural and scented baits are prohibited. Gigging is specifically prohibited in the Little Piney WTMA.

Trout Management Areas (TMAs) are found within the Roubidoux Creek TMA in Pulaski County (Waynesville) and the Little Piney Creek TMA in Phelps County near Newburg. The Roubidoux Creek TMA begins at Roubidoux Spring and extends about 0.5 miles downstream of the Business I-44 Bridge. The boundary is marked by an overhead utility cable. The Little Piney Creek TMA begins at Milldam Hollow Access and extends to the Phelps County Road 7360 Bridge. The daily limit is five trout with no special restrictions on tackle.

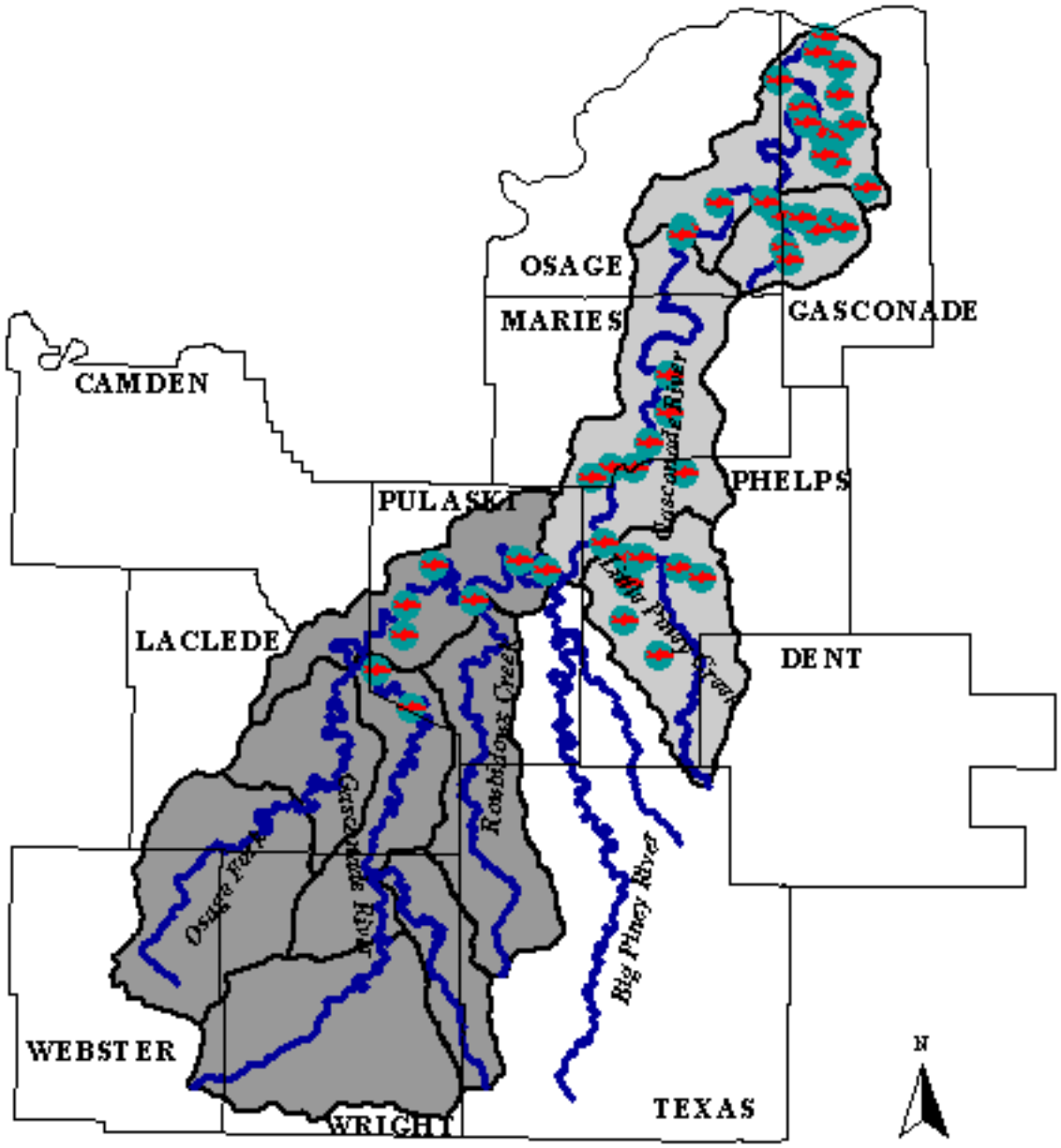
A Special Management Area (SMA) for trout is found within Roubidoux Creek in Pulaski County. The area begins at the overhead utility cable about 0.5 miles downstream of the Business I-44 Bridge and extends down to the Gasconade River. The daily limit is three trout with a 15-inch minimum length limit. Gigging and bowfishing are prohibited.

For walleye and sauger a 15-inch minimum length limit has been established for certain waters of the state including all streams within the Gasconade River watershed. The Department of Conservation started a new walleye initiative in 1998. This effort included a focus on several streams. The Gasconade River was not included as one of the priority rivers, therefore it does not receive any supplemental stocking. A statewide 15-inch minimum length limit was enacted for walleye and sauger in March 2000. A more restrictive length limit is available but has not been applied to the Gasconade to date.

Gigging is allowed throughout the Gasconade River watershed, unless specifically prohibited. The gigging season runs from September 15 to January 31. Non-game species may be taken by this method.

Snagging is allowed throughout the Gasconade River watershed. The snagging season runs from March 15 to May 15. Non-game species may be taken by this method.

Figure 22. Fish community collection sites from 1996-99 in the Gasconade River Watershed



Legend

- County Boundaries
- Fish community sample sites
- Gasconade River Major Segments

Gasconade Watershed

- Upper Gasconade River Watershed
- Lower Gasconade River Watershed

Data Source: USGS Topos – Streams;
Fish Community–MDC Fisheries Division.

Map Production: Todd J. Blank, Missouri Department of Conservation, August 1999

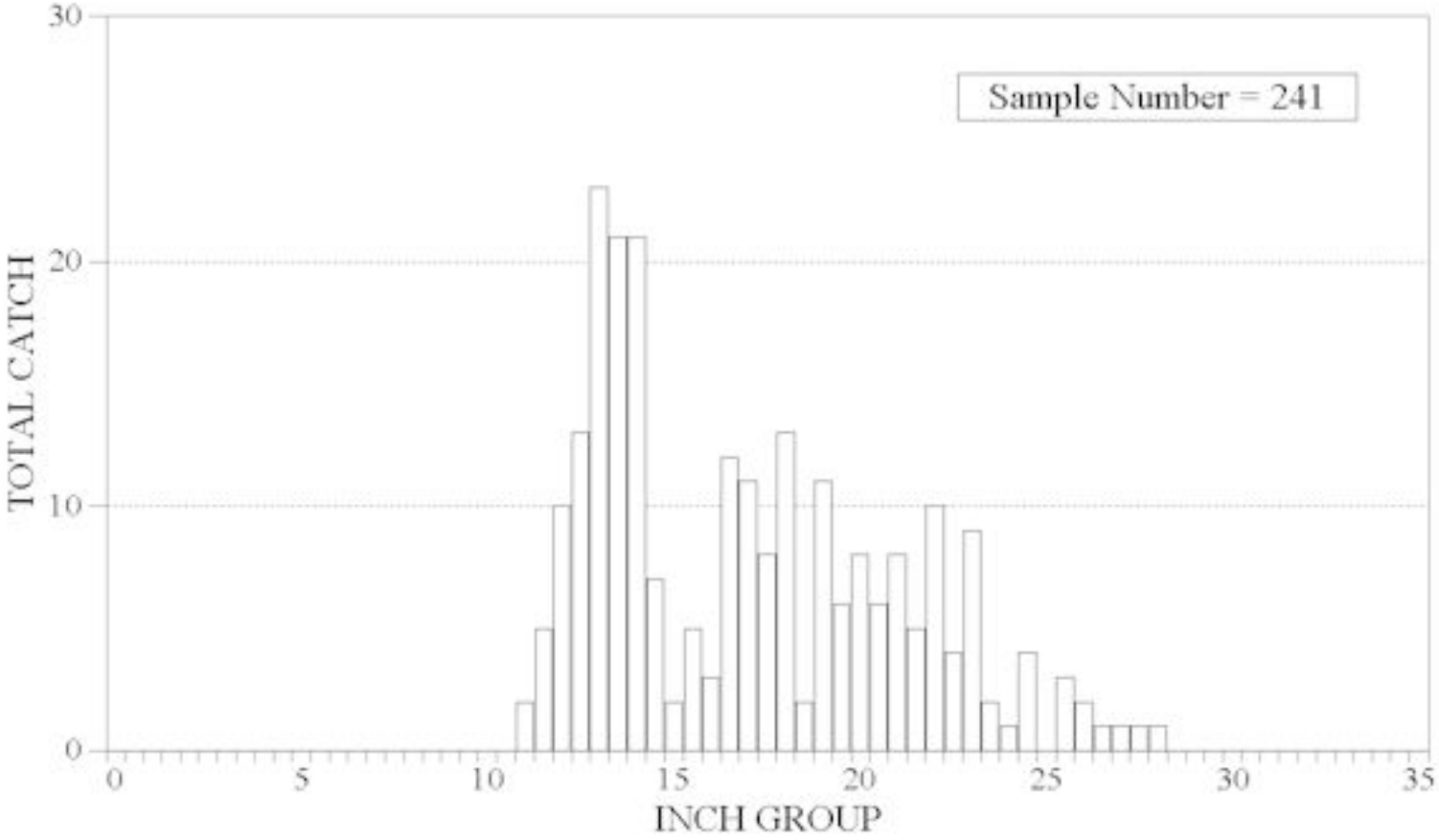
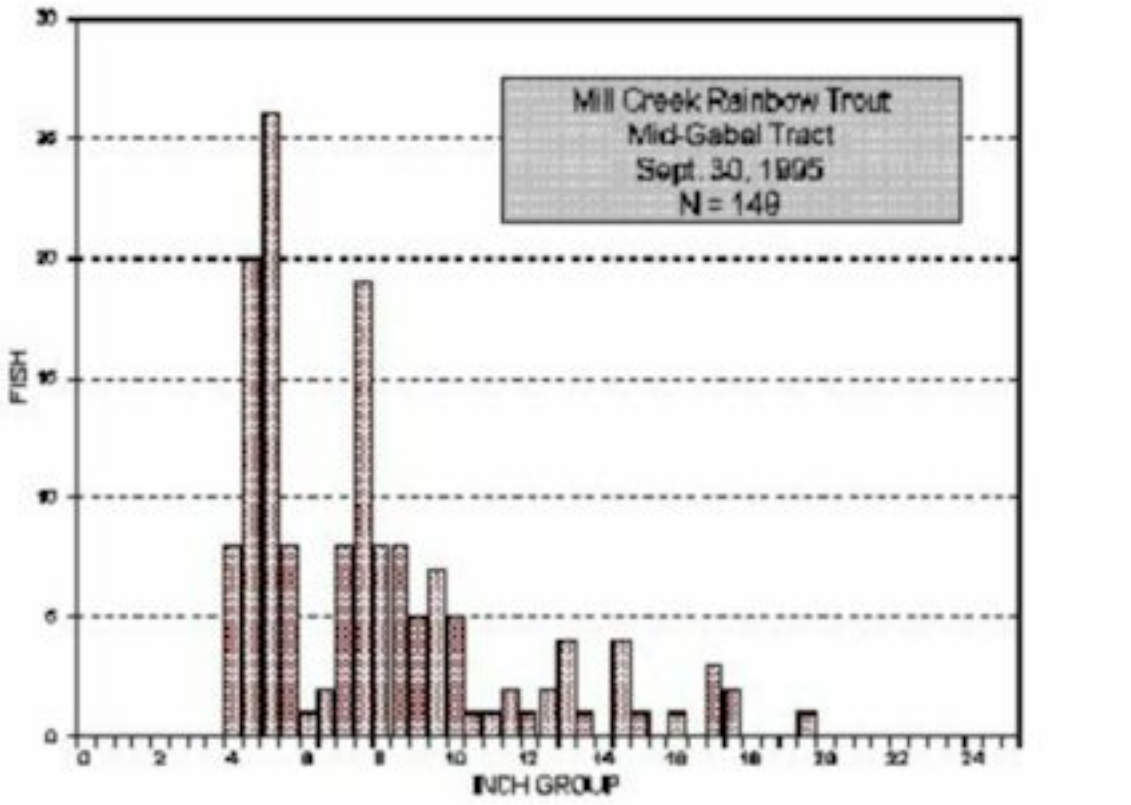


Figure 23. Gasconade River Channel Catfish 1999 Sample from Jerome Access to Highway 42.



Mill Creek Gabel Tract Rainbow Trout of the Gasconade River watershed. September 30, 1995. Sample size = 149.

Table 27. Fish species collected within the Gasconade River watershed. Represented are both Missouri Department of Conservation Fisheries Research Section and Fisheries Management Section. Historic collections – 1900-96. Recent collections – 1997-99.

Scientific Name	Common Name
Petromyzontidae (Lampreys)	
Ichthyomyzon castaneus	Chestnut lamprey
Ichthyomyzon gagei	Southern brook lamprey
Ichthyomyzon fossor	Northern brook lamprey
Ichthyomyzon	Larval lamprey
Acipenseridae (Sturgeons)	
Scaphirhynchus platorynchus	Shovelnose sturgeon
Polyodontidae (Paddlefishes)	
Polyodon spathula	Paddlefish
Lepisosteidae (Gars)	
Lepisosteus platostomus	Shortnose gar
Lepisosteus osseus	Longnose gar
Anguillidae (Freshwater Eels)	
Anguilla rostrata	American eel
Clupeidae (Shad)	
Dorosoma cepedianum	Gizzard shad
Alosa alabamae	Alabama shad
Hiodontidae (Mooneyes)	
Hiodon alosoides	Goldeye
Hiodon tergisus	Mooneye
Salmonidae (Trouts)	
Oncorhynchus mykiss	Rainbow trout
Cyprinidae (Minnows)	
Campostoma oligolepis	Largescale stoneroller
Campostoma anomalum	Central stoneroller
Carassius auratus	Goldfish
Cyprinella lutrensis	Red shiner
Cyprinella spiloptera	Spotfin shiner
Cyprinus carpio	Common carp
Erimystax X-punctatus	Gravel chub

Hygonathus argyritis	Western silvery minnow
Luxilus chrysocephalus	Striped shiner
Luxilus zonatus	Common shiner
Lythrurus U umbratilis	Western redfin shiner
Macrhybopsis storeriana	Silver chub
Nocomis biguttatus	Hornyhead chub
Notemigonus crysoleucas	Golden shiner
Notropis heterolepis	Blacknose shiner
Notropis volucellus >	Mimic shiner
Notropis rubellus	Rosyface shiner
Notropis stramineus	Sand shiner
Notropis nubilus	Ozark minnow
Notopis boops	Bigeye shiner
Notropis atherinoides	Emerald shiner
Notropis greenei	Wedgespot shiner
Notropis volucellus	Mimic shiner
Phenacobius mirabilis	Suckermouth minnow
Phoxinus erythrogaster	Southern redbelly dace
Pimephales promelas	Fathead minnow
Pimephales notatus	Bluntnose minnow
Semotilus atromaculatus	Creek chub
Catostomidae (Suckers)	
Carpiodes carpio	River carpsucker
Carpiodes velifer	Highfin carpsucker
Carpiodes cyprinus	Quillback
Catostomus commersonni	White sucker
Hypentelium nigricans	Northern hog sucker
Ictiobus bubalus	Smallmouth buffalo
Ictiobus cyprinellus	Bigmouth buffalo
Ictiobus niger	Black buffalo
Minytrema melanops	Spotted sucker
Moxostoma duquesnei	Black redhorse
Moxostoma carinatum	River redhorse

Moxostoma erythrurum	Golden redhorse
Moxostoma anisurum	Silver redhorse
Moxostoma macrolepidotum	Shorthead redhorse
Ictaluridae (Catfishes)	
Ameiurus melas	Black bullhead
Ameiurus natalis	Yellow bullhead
Ictalurus furcatus	Blue catfish
Ictalurus punctatus	Channel catfish
Noturus exilis	Slender madtom
Noturus flavus	Stonecat
Noturus nocturnus	Freckled madtom
Pylodictis olivaris	Flathead catfish
Percopsidae (Trout-perches)	
Percopsis omiscomaycus	Trout-perch
Cyprinodontidae (Killifishes)	
Fundulus catenatus	Studfish
Fundulus olivaceous	Blackspotted topminnow
Fundulus sciadicus	Plains topminnow
Fundulus notatus	Blackstripe topminnow
Poecilliidae (Livebearers)	
Gambusia affinis	Mosquitofish
Atherinidae (Silversides)	
Labidesthes sicculus	Brook silverside
Cottidae (Sculpins)	
Cottus carolinae	Banded sculpin
Cottus bairdi	Mottled sculpin
Cottus hypselurus	Ozark sculpin
Percichthyidae (Sea Basses)	
Morone chrysops	White bass
Centrarchidae (Basses)	
Ambloplites rupestris	Rock bass
Lepomis microlophus	Redear sunfish
Lepomis megalotis	Longear sunfish

Lepomis macrochirus X Lepomis megalotis	Bluegill X Longear sunfish
Lepomis macrochirus	Bluegill
Lepomis humilis	Orangespotted sunfish
Lepomis gulosus	Warmouth
Lepomis cyanellus X Lepomis megalotis	Green sunfish X Longear sunfish
Lepomis cyanellus X Lepomis macrochirus	Green sunfish X Bluegill
Lepomis cyanellus	Green sunfish
Micropterus salmoides	Largemouth bass
Micropterus punctulatus	Spotted bass
Micropterus dolomieu	Smallmouth bass
Pomoxis annularis	White crappie
Pomoxis nigromaculatus	Black crappie
Percidaes (Perches)	
Etheostoma tetrazonum	Missouri saddled darter
Etheostoma spectabile spectabile	Northern orangethroat
Etheostoma flabellare lineolatum	Striped fantail
Etheostoma blennioides	Greenside darter
Etheostoma punctulatum	Stippled darter
Etheostoma nigrum	Johnny darter
Etheostoma zonale	Banded darter
Etheostoma caeruleum	Rainbow darter
Percina cymatotaenia	Bluestriped darter
Percina phoxocephala	Slenderhead darter
Percina caprodes fulvitaenia	Ozark logperch
Percina evides	Gilt darter
Stizostedion canadense	Sauger
Stizostedion vitreum	Walleye
Sciaenidae (Drums)	
Aplodinotus grunniens	Freshwater drum

Table 28. Living and dead mussel species collected from 1980-94 and 1998-1999 within streams of the Gasconade River watershed (Missouri Department of Conservation Fisheries Research Collection 1995b and 1999).

Scientific Name	Common Name
Actinonaias ligametina	Mucket
Alasmidonta marginata	Elktoe
Amblema plicata	Threeridge
Corbicula fluminea	Asiatic Clam
Cumberlandia monodonta	Spectaclecase
Cyclonaias tuberculata	Purple Wartyback
Ellipsaria lineolata	Butterfly
Elliptio crassidens	Elephant-ear
Elliptio dilatata	Spike
Fusconaia ebena	Ebonyshell
Fusconaia flava	Wabash Pigtoe
Lampsilis reeviana reeviana	Arkansas Broken-ray
Lampsilis reeviana brittsi	Northern Broken Shell
Lampsilis siliquoidea	Fatmucket
Lampsilis abrupta	Pink Mucket
Lampsilis teres	Yellow SandShell

Lampsilis cardium	Plain Pocketbook
Lasmigona costata	Fluted-shell
Lasmigona omplanata complanata	White Heelsplitter
Leptodea fragilis	Fragile Paper shell
Leptodea leptodon	Scaleshell
Ligumia recta	Black Sandshell
Ligumia subrostrata	Pondmussel
Megalonaias nervosa	Washboard
Obliquaria reflexa	Threehorn Wartyback
Pleurobema sintoxia	Round Pigtoe
Potamilus alatus	Pink Heelsplitter
Potamilus ohiensis	Pink Papershell
Ptychobranchus occidentalis	Ouachita Kidneyshell
Pyganodon grandis	
Quadrula quadrula	Mapleleaf
Quadrula metanevra	Monkeyface
Quadrula pustulosa	Pimpleback
Strophitus undulatus	Squawfoot
Tritigonia verrucosa	Pistolgrip

Toxolasma parvus	Lilliput
Truncilla truncata	Deertoe
Truncilla donaciformis	Fawnsfoot
Utterbackia imbecillis	Paper Pondshell
Venustaconcha ellipsiformis	Ellipse
Villosa iris	Rainbow
Villosa lienosa	Little Spectaclecase

Table 29. Total specimens, occurrences, and the percentage composition of crayfish species within the Gasconade River watershed (Missouri Department of Conservation 1995a), excluding the Salem cave crayfish.

Species	Occurrences	Total Specimens	% Composition
Orconectes punctimanus **(Spothanded crayfish)**	59	1922	46.36
Orconectes luteus **(Golden crayfish)**	59	2207	53.23
Cambarus diogenes **(Devil crayfish)**	1	2	0.05
Fallicambarus fodiens **(Digger crayfish)**	1	15	0.36
		4146	100.00

Table 30. Benthic macroinvertebrate collections for the Gasconade River from 1962-92 (printout from the Fisheries Research Benthic Collection).

Family	Species	Stream	Mile	Order
Annelida				
	Hirudinea	Gasconade River	77	7
	Oligochaeta	L Piney River	17	5
	Branchiobdellidae	L Piney River	14 <	5
Arthropoda				
Aeshnidae	*Aeshna sp.*	L Piney River	15	5
Asellidae	*Caecidotea sp.*	Gasconade River	106	7
	Lirceus sp.	Gasconade River	229	6
	Caecidotea stygius (Packard)	Gasconade River	77	7
Athericidae	*Atherix lantha Webb*	L Piney River	17	5
Baetidae	*Acentrella sp.*	L Piney River	17	5
	Baetis tricaudatus Dodds	L Piney River	17	5
	Baetis sp.	Gasconade River	77	7
Baetiscidae	*Baetisca lacustris McDunnough*	Gasconade River	77	7

	Baetisca sp.	Gasconade River	106	7
Brachycentridae	*Brachycentrus sp.*	Gasconade River	106	7
	Brachycentrus americanus (Banks)	Gasconade River	77	7
Caenidae	*Brachycercus prudens (McDunnough)*	Gasconade River	106	7
Caenidae	*Caenis sp.*	L Piney River	17	5
Calopterygidae	*Hetaerina americana (Fabricius)*	Gasconade River	106	7
Cambaridae	*Orconectes sp.*	Gasconade River <	77	7
	Orconectes meeki (Faxon)	Gasconade River	114	7
	Orconectes marchandi Hobbs	L Piney River	17	5
Capniidae	*Paracapnia sp.*	Gasconade River	77	7
	Allocapnia sp.	Gasconade River	77	7
Ceratopogonidae	*Dasyheleinae*	Gasconade River <	84	7
	Culicoides sp.	Gasconade River	77	7
	Bezzia/Probezzia...	L Piney River	17	5

Coenagrionidae	*Enallagma praevarum (Hagen)*	Gasconade River	106	7
	Chromagrion sp.	Gasconade River	2	7
	Enallagma sp.	Gasconade River	106	7
	Argia sp.	Gasconade River	77	7
	Argia moesta (Hagen)	L Piney River	17	5
Corydalidae	*Nigronia fasciatus (Walker)*	Whetstone Ck	1	5
	Corydalus cornutus (Linnaeus)	Gasconade River	77	7
	Nigronia serricornis (Say)	Gasconade River	116	6
Crangonyctidae	*Crangonyx minor Bousfield*	L Piney River	17	5
Curculionidae	*Onychylis sp.*	Gasconade River	229	6
Dryopidae	*Helichus lithophilus (Germar)*	Gasconade River	106	7
	Helichus sp.	Gasconade River	106	7
Dytiscidae	*Hydroporus niger Say*	Dove Creek	2	3
	Hydroporus undulatus Say	L Piney River	15	5
Elmidae	*Stenelmis lateralis Sanderson*	Gasconade River	77	7

	Dubiraphia sp.	Gasconade River	77	7
	Ancyronyx variegata (Germar)	Gasconade River	77	7
	Optioservus sandersoni Collier	L Piney River	17	5
	Stenelmis crenata (Say)	Gasconade River	77	7
	Macronychus glabratus Say	Gasconade River	77	7
	Heterelmis vulnerata (LeConte)	Gasconade River	106	7
	Stenelmis sp.	L Piney River	17	5
	Stenelmis beameri Sanderson	Gasconade River	77	7
Ephemerellidae	*Eurylophella sp.*	Gasconade River	77	7
	Serratella sp.	Gasconade River	77	7
	Ephemerella (invaria grp.)	Gasconade River	77	7
	Ephemerella sp.	Gasconade River	77	7
	Eurylophella temporalis (McDunnough)	L Piney River	14	5
	Eurylophella (bicolor grp.)	Gasconade River	77	7

	Serratella deficiens (Morgan)	Gasconade River	77	7
Ephemeridae	*Hexagenia sp.*	Gasconade River	54	7
	Ephemera simulans Walker	Gasconade River	77	7
	Ephemera sp.	Gasconade River	77	7
	Hexagenia limbata Serville	Gasconade River	77	7
Gammaridae	*Gammarus pseudolimnaeus Bousfield*	Gasconade River	116	6
	Gammarus sp.	Gasconade River	77	7
Glossosomatidae	*Agapetus sp.*	L Piney River	17	5
Gomphidae	*Ophiogomphus rupinsulensis (Walsh)*	Gasconade River	116	6
	Stylogomphus albistylus (Hagen)	Gasconade River	114	7
	Hagenius brevistylus Selys	Gasconade River	84	7
	Ophiogomphus sp.	Gasconade River	77	7
	Erpetogomphus designatus Hagen	Gasconade River	77	7
Helicopsychidae	*Helicopsyche borealis (Hagen)*	L Piney River	17	5

Heptageniidae	*Stenacron gildersleevei (Traver)*	Gasconade River	77	7
	Stenonema pulchellum (Walsh)	L Piney River	17	5
	Stenonema femoratum (Say)	L Piney River	14	5
	Rhithrogena pellucida Daggy	Gasconade River	77	7
	Stenonema mediopunctatum (McDunnough)	L Piney River	14	5
	Heptagenia (group 3)	Gasconade River	106	7
	Stenonema bednariki McCafferty	Gasconade River	229	6
	Stenacron sp.	Gasconade River	77	7
	Heptagenia sp.	L Piney River	17	5
	Stenacron (interpunctatum grp.)	Gasconade River	77	7
Hydrophilidae	*Laccobius sp.*	Gasconade River	106	7
	Hydrochus sp.	Gasconade River	106	7
	Berosus sp.	Gasconade River	77	7
Hydropsychidae	*Ceratopsyche piatrix Ross*	L Piney River <	15	5
	Ceratopsyche morosa Hagen	Gasconade River	106	7

	Ceratopsyche slossonae Banks	L Piney River	17	5
	Hydropsyche simulans/incommoda	L Piney River	14	5
	Hydropsyche sp.	Osage Fork	75	4
	Ceratopsyche (morosa grp.)	L Piney River	17	5
	Hydropsyche venularis Banks	Gasconade River	77	7
	Hydropsyche frisoni Ross	Gasconade River	77	7
	Hydropsyche betteni Ross	Gasconade River	77	7
	Cheumatopsyche sp.	L Piney River	17	5
	Hydropsyche cuanis Ross	Gasconade River	77	7
	Macrostemum carolina (Banks)	Gasconade River	229	6
Hydroptilidae	*Ochrotrichia sp.*	L Piney River	17	5
	Ithytrichia clavata Morton	Gasconade River	116	6
	Oxyethira sp.	L Piney River	17	5
	Agraylea multipunctata Curtis	Gasconade River	77	7
	Ithytrichia sp.	Gasconade River	77	7

	Hydroptila sp.	Gasconade River	77	7
Isonychiidae	*Isonychia sp.*	L Piney River	17	5
Leptoceridae	*Oecetis inconspicua (Walker)*	Gasconade River	77	7
	Nectopsyche sp.	Gasconade River	77	7
	Leptophlebia cupida (Say)	Gasconade River	106	7
	Choroterpes sp.	Shoal Creek	1	2
	Paraleptophlebia moerens (McDunnough)	Gasconade River	116	6
	Traverella sp.	Gasconade River	106	7
	Choroterpes basalis (Banks)	Woods Fork	1	4
Leuctridae	*Leuctra tenuis (Pictet)*	L Piney River	17	5
Limnephilidae	*Neophylax fuscus Banks*	Gasconade River	114	7
	Ironoquia sp.	Woods Fork	1	4
	Limnephilus sp.	L Piney River	15	5 <
	Pycnopsyche sp.	Shoal Creek	1	2
Limnicidae	*Lutrochus laticeps Casey*	Gasconade River	77	7

Macromiidae	*Didymops sp.*	Gasconade River	106	7
Nemouridae	*Prostoia sp.*	Gasconade River	77	7
	Amphinemura delosa (Ricker)	Shoal Creek	1	2
Neoephemeridae	*Neoephemera bicolor McDunnough*	Gasconade River	77	7
Perlidae	*Perlesta placida (Hagen)*	Gasconade River	77	7
	Perlinella drymo (Newman)	Gasconade River	77	7
	Paragnetina media (Walker)	L Piney River	15	5
	Neoperla clymene (Newman)	Gasconade River	77	7
	Acroneuria sp.	L Piney River	14	5
	Agnetina capitata (Pictet)	Osage Fork	75	4
Perlodidae	*Isoperla mohri Frison*	Gasconade River	77	7
	Hydroperla sp.	Woods Fork	1	4
	Isoperla bilineata (Say)	Gasconade River	77	7
	Isoperla sp.	Gasconade River	106	7
Philopotamidae	*Chimarra aterrima Hagen*	Gasconade River	77	7

	Chimarra obscura (Walker)	L Piney River	17	5
Phryganeidae	*Phryganea sp.*	Gasconade River	106	7
Polycentropodidae	*Neureclipsis crepuscularis (Walker)*	Gasconade River	116	6
	Polycentropus sp.	Gasconade River	77	7
Potamanthidae	*Anthopotamus sp.*	Gasconade River	77	7
Psephinidae	*Psephenus herricki (DeKay)*	L Piney River	17	5
	Ectopria nervosa (Melsheimer)	L Piney River	17	5
Psychomyiidae	*Psychomyia flavida Hagen*	L Piney River	14	5
Pteronarcyidae	*Pteronarcys pictetii Hagen*	Gasconade River	77	7
	Pteronarcys sp.	Gasconade River	77	7
Pyralidae	*Petrophila sp.*	Gasconade River	77	7
Rhyacophilidae	*Rhyacophila sp.*	Shoal Creek	1	2
Sialidae	*Sialis sp.*	Gasconade River	77	7
Tabanidae	*Chrysops sp.*	Gasconade River	77	7
Taeniopterygidae	*Strophopteryx fasciata (Burmeister)*	Gasconade River	77	7

	Strophopteryx sp.	Gasconade River	77	7
	Taeniopteryx sp.	Gasconade River	77	7
	Taeniopteryx parvula Banks	Gasconade River	106	7
	Taeniopteryx metequi Ricker & Ross	L Piney River	14	5
Talitridae	*Hyalella azteca (Saussure)*	Gasconade River	77	7
Tanyderidae	*Protoplasa fitchii Osten-Sacken*	L Piney River	14	5
Tipulidae	*Limonia sp.*	Gasconade River	229	6
	Dicranota sp.	Shoal Creek	1	2
	Erioptera sp.	Gasconade River	77	7
	Tipula sp.	L Piney River	14	5
	Hexatoma sp.	L Piney River	17	5
	Antocha sp.	L Piney River	17	5
Tricorythidae	*Tricorythodes sp.*	L Piney River	17	5
Veliidae	*Rhagovelia sp.*	Woods Fork	1	4

Mollusca

Ancylidae	*Ferrissia fragilis (Tryon)*	Gasconade River	77	7
	Ferrissia sp.	Gasconade River	77	7
Corbiculidae	*Corbicula fluminea (Muller)*	Gasconade River	77	7
	Corbicula sp.	Gasconade River	54	7
Margaritiferidae	*Cumberlandia monodonta (Say)*	Gasconade River	106	7
Physidae	*Physa (Physella) sp.*	Gasconade River	77	7
Planorbidae	*Planorbula armigera (Say)*	Gasconade River	84	7
Pleuroceridae	*Elimia potosiensis plebeius (Gould)*	L Piney River	17	5
	Pleurocera acuta Rafinesque	Gasconade River	106	7
	Elimia sp.	Gasconade River	77	7
	Pleurocera sp.	Gasconade River	77	7
Nematomorpha				
Gordiida		Roubidoux Creek	1	5
Platyhelminthes				

Planariidae		L Piney River	17	5

Table 31. Sensitive animal species known from the Gasconade River (printout from the Missouri Department of Conservation's (MDC) Fish Research collection and the Natural Heritage Database, 2000).

Sensitive Animal Species	Federal Status[1]	State Status	State Rank
Fish			
Alosa alabamae (Alabama shad)			*S2*
Carpiodes velifer (Highfin carpsucker)			*S2*
Crystallaria asprella (Crystal darter)		*E*	*S1*
Etheostoma microperca (Least darter)			*S2*
Fundulus sciadicus (Plains topminnow)			*S3*
Hiodon tergisus (Mooneye)			*S3*
Ichthyomyzon gagei (Southern brook Lamprey)			*S2S3*
Notropis heterolepis (Blacknose shiner)			*S2*
Percina cymatotaenia (Bluestripe darter)			S2
Typhichthys subterraneus (Southern cavefish)			*S2S3*
Amphibians			
Ambystoma annulatum (Ringed salamander)			*S3*
Cryptobranchus alleganiensis alleganiensis (Eastern hellbender)			*S2*

Hemidactylium scumtatum (Four-toed salamander)			*S4*
Mollusks			
Alasmidonta marginata (Elktoe)			*S2?*
Cumberlandia monodonta (Spectalcecase)			*S3*
Elliptio crassidens (Elephant-ear)		*E*	*S1*
Fusconaia ebena (Ebonyshell)		*E*	*S1?*
Lampsilis abrupta (Pink mucket)	*E*	*E*	*S2*
Leptodea leptodon (Scaleshell)		*E*	*S2*
Ligumia recta (Black Sandshell)			*S1S2*
Ptychobranchus occidentalis (Ouachita Kidneyshell)			*S2S3*
Plethabasus cyphyus (Sheepnose)		*E*	*S1*
Crustaceans			
Allocrangonyx hubrichti (Central Missouri cave amphipod)			*S1S2*
Cambarus hubrichti (Salem cave crayfish)			*S3*
Fallicambarus fodiens (Digger crayfish)			*S2S3*
Stygobromus onondagaensis (Onondoga Cave amphipod)			*S3?*
Insects			

Acroneuria ozarkensis (Perlid stonefly)			*S2*
Birds			
Accipiter cooperii (Cooper's hawk)			*S3*
Accipiter striatus (Sharp-Shined hawk)			*S2*
Ammodramus henslowii (Henslow's sparrow)			*S2*
Ardea herodias (Great blue heron)			*S5*
Buteo lineatus (Red-Shouldered hawk)			*S3*
Cistothorus palustris (Marsh wren)			*S2*
Dendroica cerulea (Cerulean warbler)			*S2S3*
Gallinula chloropus (Common moorhen)			*S2*
Haliaeetus leucocephalus (Bald eagle)	*T*	*E*	*S2*
Vireo bellii (Bell's vireo)			*S3*

State status: E=Endangered

Federal status: E=Endangered; T=Threatened

State rank: S1=critically imperiled in Missouri; S2=Imperiled in Missouri; S3=rare in Missouri.

Table 32. Estimated angler effort by angling, set line fishing, gigging, and all methods combined (Fleener, G. 1982).

Totals	Angling	Set line Fishing	Gigging	All methods combined
From the upper segment of Gasconade River, State Route M near Hartville to State Highway 133 (89 miles) from March 12, 1978 to March 10, 1979.				
Total fish	81,210	160	12,200	93,570
Total hours	110,710	3,230	5,310	119,250
Fish per hour	0.73	0.05	2.30	0.78
Total fisherman	43,050	150	3,510	46,710
From the middle segment of Gasconade River, State Hwy 133 to Route E (86 miles), March 14, 1976 to March 12, 1977.				
Total fish	88,650	3,070	29,740	121,460
Total hours	250,380	31,630	21,360	303,370
Fish per hour	0.35	.10	1.39	.40
Total fishermen	71,120	4,590	5,790	81,500
From the lower segment of Gasconade River, Route E in Maries County to the mouth (89 miles), from March 13, 1977 to March 11, 1978.				
Total Fish	62,560	23,590	2,120	88,270
Total hours	146,980	200,590	5,500	353,070
Fish per hour	0.43	0.11	0.39	0.25
Total fishermen	33,030	16,300	1,730	51,060
From Osage Fork of the Gasconade River (56 miles from Wright-LaClede County line to confluence) March 12, 1978 to March 10, 1979.				

Total fish	12,920	-	2,470	15,390
Total hours	29,580	-	620	30,200
Fish per hour	0.44	-	3.99	0.54
Total fishermen	11,910	-	310	12,220

Table 33. Summary statistics of the 1996 Little Piney Creek temperature monitoring project.

Date/Location	Minimum	Maximum	Average	Standard
				Error
July 10 - August 5				
Air Temperature	51.4	91.1	71.2	7.96
Below Spring Branch	56.8	67.0	60.5	2.58
Vida Slab	58.1	71.7	64.3	3.08
Little Piney Allotment	60.7	77.9	68.5	3.92
August 7 - September 10				
Air Temperature	56.3	83.5	70.4	5.99
Below Spring Branch	57.0	66.2	60.5	2.20
Vida Slab	58.9	72.0	64.0	2.79
Little Piney Allotment	61.8	76.2	67.9	2.83
Lower Bridge	62.8	78.1	68.9	2.85